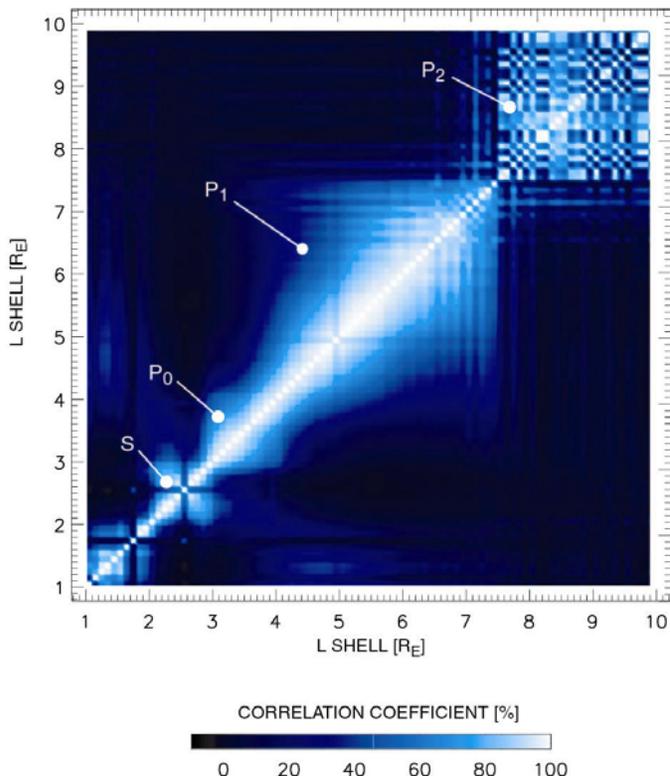


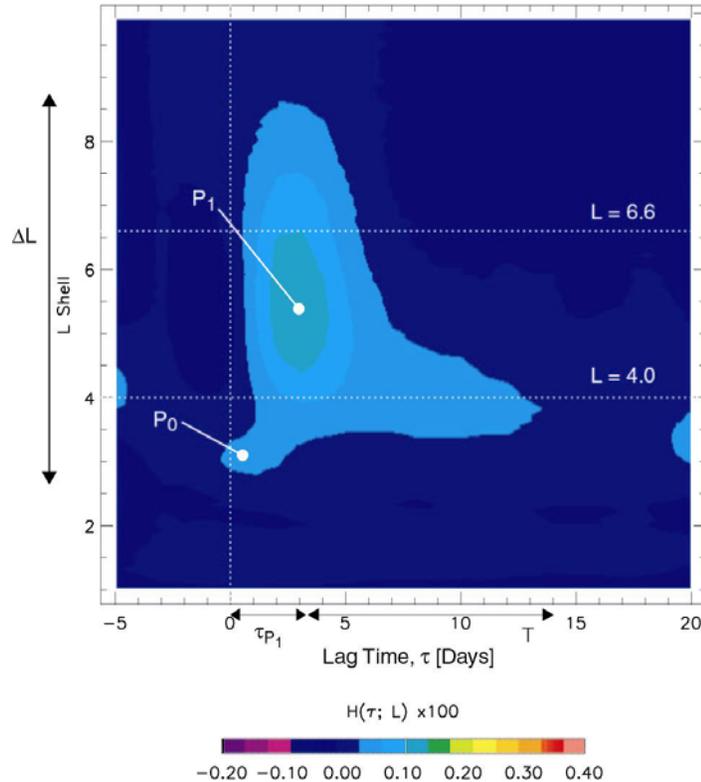
SAMPEX and Polar Provide New Insights on the Structure and Dynamics of Earth's Electron Radiation Belts

SAMPEX/PET: RADIAL CORRELATION FUNCTION
1993-2000



STRUCTURE

LONG-TERM-AVERAGE IMPULSE RESPONSE OF $j(t;L)$ TO V_{SW}
1993-2000



DYNAMIC RESPONSE

New Insights on the Structure and Dynamics of the Electron Radiation Belts

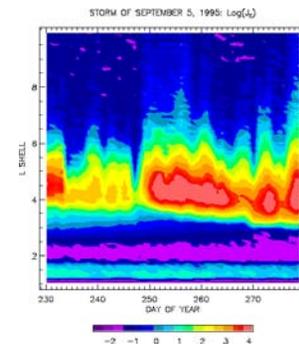
NASA's SAMPEX and Polar spacecraft have provided complementary perspectives of Earth's radiation belts.

SAMPEX has provided continuous monitoring of the radiation belt state in key energy ranges for more than one solar cycle. Analysis of these measurements with innovative correlative and filtering techniques has revealed the three-layer structure of the radiation belts, thus solidifying the observational evidence for magnetospheric coherence (left graph on previous page). It has also made clear the dynamic response of each layer to a different set of geoeffective solar wind structures. This distinction in the response helps understand the wide variability of storm responses (examples shown on this page).

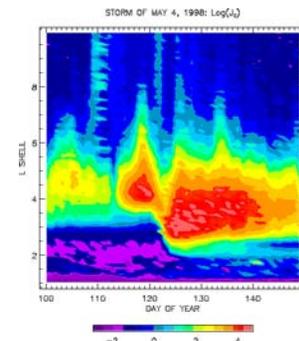
Polar, on the other hand, has closely focused in the main part of the outer belt, confirming the structural results. Its data are currently used to understand significant details of specific acceleration processes.

Electron flux variability* During magnetic storms

a. HSS-induced storm,
September 1995.



b. CME-induced storm,
May 1998.



*As recorded by SAMPEX/PET @2-6 MeV